

a¹²
descending speed of the capping head 6 is increased in order to prevent the vessel 2 from being lifted up as the female threads 5a on the cap 5 are engaged with the underside of the male threads 2a on the vessel 2 to further the threadable engagement.

IN THE CLAIMS

Please cancel Claims 1-9.

Please add new Claims 10-20 as follows.

10. (New) A method of clamping a cap onto a vessel comprising the steps of:

providing a cap having threads, a vessel having threads with a predetermined winding angle adapted to engage with the threads of the cap, a capping head holding said cap and a motor for rotating the capping head in a clamping direction;

a¹³
measuring a change in a force acting on the cap as distal ends of the threads on the cap and the vessel contact each other during relative rotation of both threads; and

detecting an incipient position of a meshing engagement where the distal ends of both threads first contact each other on the basis of the change in the acting force.

Sub B¹
11. (New) The method of Claim 10, further comprising the steps of:

causing the cap held by the capping head to descend and fit around a mouth of the vessel;

stopping the descent at an elevation where the distal end of the threads on the cap abut against the distal end of the threads on the vessel;

rotating the cap until a position is reached where at least the distal ends of both threads on the cap and vessel abut against each other while measuring a change in the force

acting on the cap under a condition of the descent having ceased; and

detecting a position where an increase occurs in the acting force as an incipient position of meshing engagement where the distal ends of both threads first contact each other.

12. (New) The method of Claim 10, further comprising the steps of:

causing the cap held by the capping head to descend and fit around a mouth of the vessel;

rotating the cap in a direction opposite to the clamping direction until a rotational position is reached where at least the distal end of the threads on the cap disengage from the threads on the vessel while measuring a change in the force acting on the cap; and

detecting a position where the acting force changes from increasing to decreasing as an incipient position of meshing engagement where the distal ends of both threads first contact each other.

13. (New) The method of Claim 10, further comprising the steps of:

causing the cap held by the capping head to descend and fit around a mouth of the vessel;

rotating the cap in the clamping direction during its descent at such a speed that the cap rotates through at least one revolution while it descends by a vertical distance corresponding to the width of one of the threads on the vessel;

continuing the rotation of the cap in the clamping direction until a rotational position is reached where at least the distal ends of both threads on the cap and the vessel abut each other while measuring a change in the force acting on the cap; and

detecting a position where a change in the acting force occurs as an incipient position of meshing engagement where the distal ends of both threads first contact each other.

14. (New) The method of Claim 10, in which a rotational load acting on the cap is measured as the acting force.

15. (New) The method of Claim 10, in which a vertical load acting on the cap is measured as the acting force.

16. (New) A capping apparatus for clamping a cap onto a vessel, said apparatus comprising:

a capping head for holding a cap having threads;

a motor for rotating the capping head in a clamping direction so the cap can be clamped onto a vessel having threads with a predetermined winding angle adapted to engage with the threads of the cap;

an elevating mechanism for raising the capping head up and down;

measuring means for measuring a change in a force acting on the cap which is held by the capping head;

angle detecting means for detecting an angular position to which the capping head is rotated; and

control means for causing the capping head to rotate forwardly or reversely with respect to the clamping direction during the course of a descent of the capping head to an elevation where a clamping of the cap is to be initiated, measuring a change in a force acting on the cap as distal ends of the threads on the cap and the vessel contact each other during relative rotation of both threads and detecting an incipient position of a meshing engagement where the distal ends of both threads first contact each other on the basis of the change in the acting force.